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EXAMINER

CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/681,080	Applicant(s) NISSINEN ET AL.	
	Examiner Dennis Cordray	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 60-108 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 60-70, 75-94 and 97-108 is/are rejected.
- 7) ☒ Claim(s) 71-73, 95 and 96 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/8/03, 3/7/05</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

Reference number 9 in Figure 1 is not mentioned in the description of the figure. The portion of the drawing indicated by reference number 9 appears to match the description given on page 10, lines 7-10 of the Specification.

Reference number 25 in Figure 6 is not mentioned in the description of the figure. The portion of the drawing indicated by reference number 25 appears to match the description given on page 12, lines 17-26 of the Specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Claim 66 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 66 recites a limitation of "flocced particles having an average size not larger than 500 nm," whereas the parent claim, 60, recites "pigment particles having an average size in the range of 0.5 to 100 nm." Claim 66 expands rather than further limits the matter of Claim 60.

Claims 69 and 70 are objected to because of the following informalities: The word "that" following "wherein" should be omitted. Appropriate correction is required.

Claims 86 and 87 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims recite a limitation of "before calendering, treating the web with a treatment material." The parent claims, 82 and 83 respectively, recite a limitation of "further comprising calendering the web" after the treatment with pigment particles from Claims 71 and 72, respectively, which recite a treatment step. Thus, the web has already been treated with a treatment material prior to calendering.

Claim 90 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper

Art Unit: 1731

dependent form, or rewrite the claim(s) in independent form. Claim 90 recites "the elementary pigment particles are added to the web at least during the spreading step." However, the parent claim, 88, recites formation of the web and then adding the pigment particles to the web. Thus, Claim 90 expands rather than limits the parent claim.

Claims 92 and 93 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 92 recites adding the pigment particles to the formed web while Claim 93 recites adding the particles by means of an ion-blast technique. Both claims ultimately depend from Claim 88, which recites treating the formed web with pigment particles by an ion-blast technique.

Claim 106 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim recites a limitation of "wherein the web is treated with a treatment material prior to calendaring." The parent claim, 104, recites a limitation of "wherein the web is calendared" from Claims 103, which recites "calendaring the web after the particle treatment step." Thus, the web has already been treated with a treatment material prior to calendaring.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 74-77, 97-99 and 106 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 74 and 97 recite treating the web with alum or a polymer. Claims 75 and 97 recite treating the web with an electrolytic or corona discharge treatment. Claims 76 and 98 recite an electromagnetic radiation treatment to the web. The Specification provides insufficient indication of how or to what extent such treatments are applied to enable one skilled in the art to perform the claimed treatments.

Claim 106 recites "wherein the web is treated with a treatment material." The claim provides insufficient indication of what treatment is contemplated and how or to what extent such treatment is applied to enable one skilled in the art to perform the claimed treatment.

Claims 77 and 99 are dependent on Claim 76 and thus inherits the lack of enablement.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 1731

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 71-72, 74-76, 78, 81, 88 and 104 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 71 and 72 recite "said treating step" in Claim 60; Claims 74-76 and 78 recite "said treatment step" in Claim 60; Claim 81 recites "the particle treatment step" in Claim 60. Claim 60 only recites one treatment step. Referring to a single treatment step by multiple names is indefinite because it is unclear if additional undisclosed steps are being claimed.

Claim 104 recites the limitation "the calcium carbonate particles" in Claim 103, which further depends from Claim 88. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 60-64 and 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al (5543382).

Watanabe et al discloses a glassine paper having a surface treatment comprising a resin layer that can contain a pigment (Abstract). The pigment has a preferred particle size of 0.01 to 5 μm (10 to 5000 nm), which encompasses the claimed range.

Art Unit: 1731

Particles in the size range of 10 nm are inherently subject to van der Waals binding forces. Forming the web from the glassine fibers is an inherent part of making the paper. Preferred pigment particles include calcium carbonate (col 9, lines 9-15). The resin layer also includes a polymer (i.e.-polyvinyl alcohol) as a binder (col 7, lines 64-67).

Claims 60, 62-66 and 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Kondo et al (5320897).

Kondo et al discloses an ink jet recording paper treated with a treatment material comprising single pigment particles having diameters of about 0.1 to 0.3 μm (about 100-300 nm) or clusters of particles having a diameter in the range of 0.5 to 20 μm (500-20000 nm), which overlaps the claimed ranges. The pigment particles are precipitated calcium carbonate (Abstract; col 4, lines 42-55). The coating also contains a polymeric binder (col 7, line 63 to col 8, line 11). Any papermaking process, including a standard papermaking machine, can be used to form the paper, thus formation of a web from fibers is inherent (col 7, lines 49-58). The particles in the size range of 100 nm are subject to van der Waals binding forces (if evidence is needed, see Virtanen (WO 97/32934), p 7, lines 17-23).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 1731

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 60-66, 74, 78, 81-94, 97, 100, and 103-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ilmasti et al (WO 98/11999) in view of Watanabe et al and further in view of Haylock ("Paper, Its making, merchanting and usage", 3rd ed, The National Association of Paper Merchants, London, 1974, pp 60-61, 102-103, 116-118).

Ilmasti et al discloses a method of transferring material additives to the surface of a moving web, for instance paper, wherein the web is manufactured by a conventional continuous web formation process (p 1, lines 4-9). Application of dust or sprayable materials is disclosed (p 2, lines 10-11).

Ilmasti et al discloses a method of addition wherein the web passes through a housing wherein the additional material is transferred to the web by ion blasting provided by a high voltage potential between high voltage electrodes above the web (second electric potential) and a plate electrode (first electric potential) below the web (p 2, lines 5-15; p 3, lines 1-12). The web moves across the lower plate electrode and is thus brought to a first electric potential by virtue of moving to the plate.

Ilmasti et al does not disclose the following:

- a pigment or calcium carbonate for the material additive
- the particle size of the additive
- formation of the web with cellulosic fibers, plant fibers or other suitable material
- polymer added to the web in addition to the particles

Art Unit: 1731

- mechanical treatment before the coating treatment
- calendaring after the treatment

As discussed above, Watanabe discloses using calcium carbonate with a preferred particle size of 0.01 to 5 μm (10 to 5000 nm) as a pigment in a recording paper as well as a polymeric binder. Particles in the size range of 10 nm are inherently subject to van der Waals binding forces. The pigment improves the printing ability of the paper and hinders sticking of the paper to the thermal head during the recording operation.

Haylock teaches a typical papermaking process comprising spreading onto a moving web-formation substrate (wire) fibrous raw material (p 69, (A) The wet end, item 1). The material is further treated by pressure rolls (mechanical treatment) (item 4). Finishing steps include calendaring using one or more heated rolls to achieve a smooth finish (p 102-103, Calendaring). Coating is a typical finishing step as well used to apply pigments and polymeric adhesives (p 116, Coating). Calendaring is a step following coating that provides the best finishes (p 118, 3rd par). Some of the calendar rolls can be heated (p 103, first half of page). Fillers and pigments can be added to the pulp (p 60, Loadings or Fillers to p 61, Sizing Agents). Formation of a nonwoven web from cellulosic fibers, plant fibers, glass fibers or other fibers is a well known (p 13, last par).

The art of Ilmasti et al, Watanabe et al, Haylock and the instant invention are analogous as pertaining to papermaking and the use of pigments in papermaking. It would have been obvious to one of ordinary skill in the art to 1) use a standard papermaking process including formation with cellulosic, plant or other suitable fibers,

Art Unit: 1731

mechanical treatment before coating, calendaring with one or more heated rolls after the coating treatment and adding a polymer binder to the paper; and 2) to use calcium carbonate with the claimed particle size as a coating for the paper of Ilmasti et al in view of Watanabe et al and further in view of Haylock to produce a paper with good printing ability and which does not stick to the thermal head.

Claims 67-70 and 107-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ilmasti et al in view of Watanabe et al and further in view of Haylock, as discussed above, and further in view of Virtanen (WO 96/23728), Virtanen (WO 97/32934) and Andersen et al (WO 95/18885).

Ilmasti et al, Watanabe et al and Haylock do not disclose the preparation of calcium carbonate particles.

Virtanen (WO 96/23728) discloses a process for preparing precipitated calcium carbonate clusters wherein the size of the clusters is regulated to between 0.2-0.4 μm (200-400 nm) by applying turbulence (Abstract; p 6, lines 105). Virtanen (WO 97/32934) discloses a process for preparing precipitated calcium carbonate clusters wherein the size of the clusters is regulated by adjusting the pH of an aqueous dispersion of calcium carbonate (Abstract; p 7, lines 1-5). Particles as small as 30-60 nm are produced and attach to a substrate by van der Waals forces (p 9, lines 8-15). Andersen et al (WO 95/18885) discloses recovery of calcium carbonate from sludge that is a by-product of the manufacture of recycled paper (sludge from a deinking process, for instance) comprising calcining the mineral precipitate into lime, reacting the

Art Unit: 1731

lime with water and reacting the calcium hydroxide with carbon dioxide (Abstract; p 7, lines 25-29).

The art of Ilmasti et al, Watanabe et al, Haylock, Virtanen (WO 96/23728), Virtanen (WO 97/32934), Andersen et al and the instant invention are analogous as pertaining to pigments and calcium carbonate used in papermaking. It would have been obvious to one of ordinary skill in the art to regulate size of the precipitated calcium carbonate clusters using turbulence or pH, and to use recycled calcium carbonate processed from a waste sludge, such as a deinking sludge, in the coating for the paper of Ilmasti et al in view of Watanabe et al and further in view of Haylock, Virtanen (WO 96/23728), Virtanen (WO 97/32934) and Andersen et al as functionally equivalent options and to make use of inexpensive raw materials.

Claims 75, 79, 80, 97 and 101-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ilmasti et al in view of Watanabe et al and further in view of Haylock, as discussed above, and Yagi et al (4944959).

Ilmasti et al, Watanabe et al and Haylock do not disclose treating the web with an electrolytic or corona discharge or by brushing to establish a static charge. Ilmasti does disclose that conventional methods of addition include changing the electrical properties of the surface (p 1, lines 14-16).

Yagi et al discloses applying a charge to a substrate using a corona discharge or frictional contact (col 4, lines 55-62). The frictional contact can comprise rubbing the surface with an appropriate material to impart a positive or negative charge as desired

Art Unit: 1731

to the surface (col 5, lines 8-65). The electrostatic recording process wherein toner particles adhere to a charged surface is well-known.

The art of Ilmasti et al, Watanabe et al, Haylock, Yagi et al and the instant invention are analogous as pertaining to pigments and calcium carbonate used in papermaking. It would have been obvious to one of ordinary skill in the art to use a static charge generator, such as an electrolytic or corona discharge or by frictional brushing, to pretreat the paper of Ilmasti et al in view of Watanabe et al and further in view of Haylock and Yagi et al as functionally equivalent options to better attract and hold the pigment particles. Brushing would inherently lift the microfibrils from the surface as well as provide a static charge.

Allowable Subject Matter

Claims 71-73 and 95-96 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The large body of prior art teaches formation of precipitated calcium carbonate prior to formation of the web, either in a separate process, after which the product is conveyed to the web, or in an aqueous slurry of fibers with reactants of calcium oxide, calcium hydroxide and carbon dioxide. In the methods disclosed, there is no indication of causing the reaction to occur on the formed web.

Conclusion

Art Unit: 1731

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure [Shibazaki et al (4133894), Bergman (4405342), Nakajima et al (5138971)]. They pertain to other methods of preparation of precipitated calcium carbonate, applying pigments to a web and applying a static charge to a web.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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